

Abstract

An API source for mass spectrometry which is configured such that all or a portion of its vacuum assembly, including ion focusing and transport electrostatic lenses and ion guides, and two or more vacuum stages can be removed from the source or system vacuum housing as a complete assembly. The API source may be an ES, APCI or ICP source, or any other ion source which operates at substantially atmospheric pressure. The insert assembly can be electrically isolated from the grounded vacuum housing to enable the delivery of kilovolt potential ions into a magnetic sector mass analyzer from the API source. The insert assemblies can be configured to interface to quadrupole, Time-Of-Flight, ion trap, Fourier Transform, and magnetic sector mass analyzers. Electrical connections can be configured internally to make and break automatically when said insert assembly is inserted or removed from the surrounding vacuum housing. The insert assembly is configured to be removed from the vacuum housing without the need to disconnect vacuum pumps, vacuum pumping lines, vacuum gauges, or external electrical connectors. The invention simplifies the cleaning and maintenance of API mass analyzer systems, can reduce the cost and complexity of said systems and can reduce instrument down time. The API insert assembly removal allows for the insertion of alternative ion sources, for example, Laser Desorption, Electron Bombardment, Chemical Ionization, Thermospray, and Particle Beam hardware which can utilize the same vacuum pumps and electrical contacts as are used by the API source.

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